

## CLAIMS

What is claimed is:

- 1     1.     A mobile device comprising:  
2             a memory to store application data, the application data being associated with an  
3     application, the application data being persistent when the application is not running; and  
4             a processor to execute a runtime environment program to run the application, the  
5     application containing presentation information, information for interpreting the stored  
6     application data, and information for constructing messages to a server, the runtime environment  
7     program using the information in the application to produce a display including data from the  
8     stored application data, the runtime environment program interacting with a server to update  
9     stored application data in the background when a connection between the mobile device and  
10    server is available
- 1     2.     The mobile device of claim 1, wherein the application includes templates to construct  
2     pages.
- 1     3.     The mobile device of claim 2, wherein the stored application data is used to fill out  
2     template to produce displayed pages.
- 1     4.     The mobile device of claim 1, wherein the runtime environment program uses  
2     information from application to construct displayed pages.
- 1     5.     The mobile device of claim 1, wherein the mobile device and the sever use asynchronous  
2     messaging.
- 1     6.     The mobile device of claim 1, wherein messages are stored until a connection between  
2     the mobile device and server is available.

- 1 7. The mobile device of claim 1, wherein the application written in a markup language.
- 2 8. The mobile device of claim 7, wherein the markup language includes Xscript to access  
3 data.
- 1 9. The mobile device of claim 7, wherein the markup language includes HTML tags for  
2 page layout.
- 1 10. The mobile device of claim 1, including multiple applications each with a data store in  
2 the memory.
- 1 11. The mobile device of claim 1, wherein the runtime environment program can search for  
2 additional applications.
- 1 12. The mobile device of claim 1, wherein the runtime environment program interacts with  
2 an application registry on a server to get additional applications
- 1 13. The mobile device of claim 1, wherein the runtime environment program provides  
2 authentication information before downloading an additional application.
- 1 14. The mobile device of claim 1, wherein the runtime environment program can download  
2 additional applications.
- 1 15. The mobile device of claim 1, wherein the application receives data from web service.
- 1 16. The mobile device of claim 1, wherein the runtime environment program sends  
2 simplified messages to the server.
- 1 17. The mobile device of claim 16, wherein the server converts the simplified messages to  
2 SOAP messages for the web service and converts SOAP messages from the web service into  
3 simplified messages for the mobile device.

- 1 18. The mobile device of claim 17, wherein each simplified message includes a title and a  
2 single XML field.
- 1 19. The mobile device of claim 18, wherein the XML field contains an XML fragment.
- 1 20. The mobile device of claim 1, wherein the runtime environment program abstracts details  
2 of the mobile device from the application.
- 1 21. The mobile device of claim 20, wherein the application data is XML data.
- 1 22. The mobile device of claim 1, wherein the runtime environment program is a cage.
- 1 23. The mobile device of claim 1 wherein the application is an airlet.
- 1 24. A method comprising:  
2 storing application data on a mobile device, the application data being associated with an  
3 application, the application data being persistent when the application is not running;  
4 using a runtime environment program to execute the application on the mobile device,  
5 the application containing presentation information, information for interpreting the stored  
6 application data, and information for constructing messages to a server, the runtime environment  
7 program using the information in the application to produce a display including data from the  
8 stored application data; and  
9 in the background, using the runtime environment program to interact with a server to  
10 update stored application data when a connection between the mobile device and server is  
11 available.
- 1 25. The method of claim 24, wherein the application includes templates to construct pages.
- 1 26. The method of claim 25, wherein the stored application data is used to fill out template to  
2 produce displayed pages.

- 1 27. The method of claim 24, wherein the runtime environment program uses information  
2 from application to construct displayed pages.
- 1 28. The method of claim 24, wherein the mobile device and the sever use asynchronous  
2 messaging.
- 1 29. The method of claim 24, wherein messages are stored until a connection between the  
2 mobile device and server is available.
- 1 30. The method of claim 24, wherein the application written in a markup language.
- 1 31. The method of claim 30, wherein the markup language includes Xscript to access data.
- 1 32. The method of claim 30, wherein the markup language includes HTML tags for page  
2 layout.
- 1 33. The method of claim 24, including multiple applications each with a data store in the  
2 memory.
- 1 34. The method of claim 1, wherein the runtime environment program can search for  
2 additional applications.
- 1 35. The method of claim 24, wherein the runtime environment program interacts with an  
2 application registry on a server to get additional applications
- 1 36. The method of claim 24, wherein the runtime environment program provides  
2 authentication information before downloading an additional application.
- 1 37. The method of claim 24, wherein the runtime environment program can download  
2 additional applications.

- 1 38. The method of claim 24, wherein the application receives data from web service.
- 1 39. The method of claim 24, wherein the runtime environment program sends simplified  
2 messages to the server.
- 1 40. The method of claim 24, wherein the server converts the simplified messages to SOAP  
2 messages for the web service and converts SOAP messages from the web service into simplified  
3 messages for the mobile device.
- 1 41. The method of claim 40, wherein each simplified message includes a title and a single  
2 XML field.
- 1 42. The method of claim 41, wherein the XML field contains an XML fragment.
- 1 43. The method of claim 24, wherein the runtime environment program abstracts details of  
2 the mobile device from the application.
- 1 44. The method of claim 43, wherein the application data is XML data.
- 1 45. The method of claim 24, wherein the runtime environment program is a cage.
- 1 46. The method of claim 24 wherein the application is an airlet.
- 1 47. A computer readable media comprising a runtime environment program and an  
2 application to instruct a mobile device to do the steps of:  
3 storing application data on a mobile device, the application data being associated with the  
4 application, the application data being persistent when the application is not running;  
5 using the runtime environment program to execute the application on the mobile device,  
6 the application containing presentation information, information for interpreting the stored  
7 application data, and information for constructing messages to a server, the runtime environment

8 program using the information in the application to produce a display including data from the  
9 stored application data; and  
10 in the background, using the runtime environment program to interact with a server to  
11 update stored application data when a connection between the mobile device and server is  
12 available.

1 48. The computer readable media of claim 47, wherein the application includes templates to  
2 construct pages

1 49. The computer readable media of claim 48, wherein the stored application data is used to  
2 fill out template to produce displayed pages.

1 50. The computer readable media of claim 47, wherein the runtime environment program  
2 uses information from application to construct displayed pages.

1 51. The computer readable media of claim 47, wherein the mobile device and the sever use  
2 asynchronous messaging.

1 52. The computer readable media of claim 47, wherein messages are stored until a  
2 connection between the mobile device and server is available.

1 53. The computer readable media of claim 47, wherein the application written in a markup  
2 language.

1 54. The computer readable media of claim 53, wherein the markup language includes Xscript  
2 to access data.

1 55. The computer readable media of claim 53, wherein the markup language includes HTML  
2 tags for page layout.

- 1 56. The computer readable media of claim 47, including multiple applications each with a  
2 data store in the memory.
- 1 57. The computer readable media of claim 47, wherein the runtime environment program can  
2 search for additional applications.
- 1 58. The computer readable media of claim 47, wherein the runtime environment program  
2 interacts with an application registry on a server to get additional applications
- 1 59. The computer readable media of claim 47, wherein the runtime environment program  
2 provides authentication information before downloading an additional application.
- 1 60. The computer readable media of claim 47, wherein the runtime environment program can  
2 download additional applications.
- 1 61. The computer readable media of claim 47, wherein the application receives data from  
2 web service.
- 1 62. The computer readable media of claim 47, wherein the runtime environment program  
2 sends simplified messages to the server.
- 1 63. The computer readable media of claim 62, wherein the server converts the simplified  
2 messages to SOAP messages for the web service and converts SOAP messages from the web  
3 service into simplified messages for the mobile device.
- 1 64. The computer readable media of claim 63, wherein each simplified message includes a  
2 title and a single XML field.
- 1 65. The computer readable media of claim 64, wherein the XML field contains an XML  
2 fragment.

1 66. The computer readable media of claim 47, wherein the runtime environment program  
2 abstracts details of the mobile device from the application.

1 67. The computer readable media of claim 66, wherein the application data is XML data.

1 68. The computer readable media of claim 47, wherein the runtime environment program is a  
2 cage.

1 69. The computer readable media of claim 47 wherein the application is an airlet.